

cents and Sensibility

SUSAN SCHIFFMAN HAS BEEN hired to come up with an aroma that could be sprayed in New York City's subways to reduce commuter aggression and increase friendliness. Because of a confidentiality agreement, the Duke University psychologist can't reveal the identity of her client or the fragrance that she thinks will soothe the savage straphanger. But I'd say her best bet is chloroform.

"The idea," Schiffman says, "is to use the fact that smell is the most evocative of the senses, because it's so intricately connected to the brain's limbic system, the area associated with emotion."

It may be a while before the designations LOCAL and EXPRESS are replaced by SCENTED and UNSCENTED, but several other projects involving odor-engineering—using the link between smells and emotions to predict and manipulate human behavior—are well under way.

"We have already developed a system to control the environment by fragrance," says Junichi Yagi, vice president of S. Technology Center-America, a subsidiary of Shimizu, Japan's largest architectural, engineering, and construction firm. According to Yagi, Shimizu's Aromatherapeutic Environmental Fragrancing System, which delivers behavior-altering scents through air-conditioning ducts, has been found to calm restless nursing-home patients and to enhance efficiency and lower stress among factory and office workers.

Experiments in Japan with 13 key-punch operators, monitored eight hours a day for 30 days, showed that the average number of errors per hour dropped by 21 percent when office air was scented with lavender (it reduces stress) and by 33 percent when laced with jasmine (it induces relaxation); a stimulating lemon scent reduced errors by 54 percent. "The keypunchers enjoyed the fragrance," Yagi says. "Even when the scent was below conscious levels, they reported feeling bet-



***A rose is a rose and
a nose is a nose, but in between lies a
science of subtle manipulation.***

ter than they did without it. And we've learned that you don't have to deliver fragrance all the time."

Precise fragrance levels and the optimum delivery schedule are trade secrets, Yagi says. But he will reveal that further research has shown chamomile, Japanese cypress, orange, peppermint, and eucalyptus to be soothing, while scarlet sage and rosemary are stimulating. (I myself would add Play-Doh and Rockin' Roger's Bar-B-Q Sauce to the stimulating list.) Shimizu

has received inquiries from American banks interested in energizing their employees; some hotels are considering using fragrance as a sort of olfactory Muzak.

The concept raises many questions. Could kids taking the SATs or Olympic athletes be disqualified for illicit citrus use? What about the opportunities for sabotage? Industrial spying could be replaced by stench warfare: a sneaky competitor could spike a company's air system with enough chamo-

ILLUSTRATION BY MICHAEL WITTE

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mile to make the whole staff nod off. Or suppose greedy heirs replace granny's soporific jasmine with an overdose of rosemary, causing her to boogie to death. Still, the more I think about it, the more I'm convinced that Lemon Pledge has saved me from some potentially fatal polishing errors.

Schiffman has experimented with using puffs of aroma to keep assembly-line workers, pilots, and long-distance truckers alert. An odor is invigorating, she says, if it stimulates the trigeminal nerve, one of two nerves in the nose that receive signals from smells. "The olfactory nerve is the one that allows you to tell the difference between oranges and roses. The trigeminal nerve detects irritations, like smelling salts, or temperature, like the cooling effect of menthol. There's a tendency for aromas with a low trigeminal component to calm people and odors with a high trigeminal component to serve as pick-me-ups." That's because trigeminal stimulants, Schiffman has shown,

increase blood levels of adrenaline.

Some odors seem to have inherent properties that relax or invigorate, but others affect behavior because of experiences or sensations you might associate with them. Schiffman often deliberately creates such associations for people who want to change aspects of their behavior.

"I run the weight loss unit in the department of psychiatry," she says, "and I find that a lot of overweight people overrespond to food cues. I teach them to relax in the presence of a food odor instead of getting frantic. I also teach people with lower back pain to relax. First I guide the person through head-to-toe muscle-loosening exercises. Then, when they're very, very relaxed, I give them a hypnotic suggestion that I'm going to have them smell an odor, and the next time they smell it, they're going to be able to re-create this wonderful feeling of relaxation. I use a fruity scent with relatively pleasant or neutral associations,

such as apricot, peach, or plum. I give people little bottles they can carry in their purse or pocket."

If you can teach people to associate a scent with pleasant emotions, can you do the same with unpleasant ones? Certainly this happens spontaneously; for me the smell of Brut after-shave calls up whole worlds of adolescent agony. Using techniques similar to Schiffman's, couldn't convicts, for example, be taught to associate the smell of, say, steak with abject fear? Then guards in low-security, high-cholesterol prisons need only brandish a seared sirloin to subdue troublemakers. Or maybe all the guards would really need is a teensy spritz of Eau Sauvage on strategic pulse points.

Among those interested in the connection between scents and sensibility are commercial fragrance houses, the folks who formulate the aromas for famous-name perfumes and household products. Craig Warren is

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director of organoleptic—taste and smell—research at International Flavors and Fragrances, perhaps the nation's leading smellmeisters. "We have about two hundred thousand formulae in inventory," says Warren. "Everything from fresh butter to root beer to roses." A small but intriguing part of the business involves creating unusual aromas for clients: freshly baked bread, perhaps, or new-car smell, which is mostly leather.

"At one point," Warren recalls, "we had a call for a vomit odor, to be added to an experimental appetite suppressant. It was a technological success but a commercial failure." Yet even such near-misses go into the fragrance vault. (Although I can't imagine that this one will come up again. For what? Calvin Klein's Regurgitation? Upchuck of the Ritz? Puque by Lanvin?)

"From time to time we've been asked by museums to make a smell for a specific exhibit," Warren says. "For

Apparently baby boomers crave the smell of baby powder long after infancy; the fragrances most popular among that generation contain the same sweet note.

example, someone once wanted the odor of eighteenth-century London. We had to guess from historical evidence what the components might have been. I wasn't involved in the project, but I imagine it was a kind of coal-smoke-and-horse-manure smell. A typical request is for the smell of the

ocean. That's impossible to do; the actual smell—seaweed, clams—isn't pleasant out of context."

Researchers in the company's psychology program, Warren says, are studying how much odors can change mood and which odors evoke which moods. Such information, he says, would allow perfumers to both fine-tune the mood evoked by a fragrance and better match the advertising with the product. "For example, you wouldn't use a sensuous ad if the perfume doesn't test sensuous." But Warren is most interested in whether odor provides some sort of special sensual experience that can't be obtained by another sense.

"Odor is, after all, mediated by the area of the brain that also mediates sexual behavior, survival, and appetite," Warren says. "This should give odors some special attributes over other sensory modalities. Of course, we don't know for certain that pheromones work for human beings the way they do for

all the world's a screening room.



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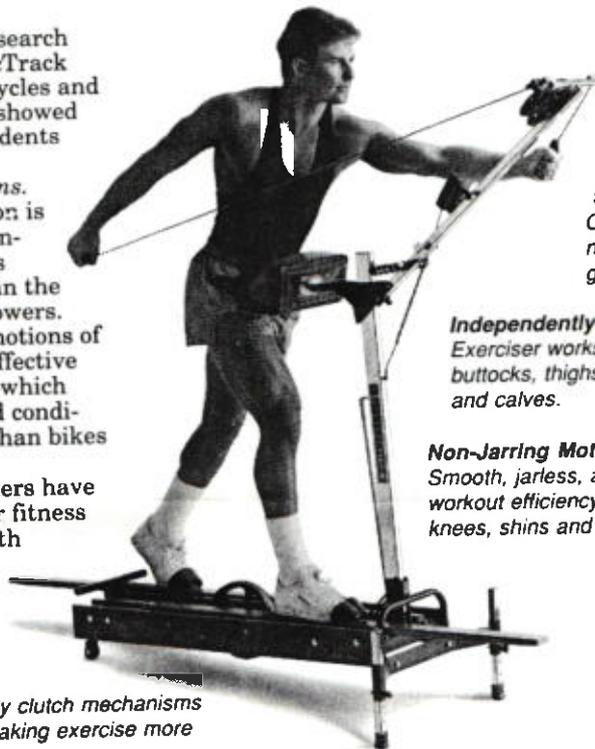
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animals. No one has yet isolated in human beings anything like the odor of a dog in heat."

When the chemists at International Flavors and Fragrances want to create a new smell—living rose, for example, one of their current projects—they follow the procedure Warren says is used by all such companies. The odor is pulled by an air pump onto an absorbent material; then it's run through a gas chromatograph to separate its components; finally a mass spectrometer identifies the molecular structure of each component.

It was this procedure that enabled the company to hit on the newly voguish fragrance compound that, added to laundry detergents, makes clothes spun in a dryer smell as if they've been hung on a line. You know, analog drying. "The sun-dried cloth odor," Warren says, "was done by hanging cotton cloth on a line, exposing it to the sun, extracting molecules from the cotton, determining their struc-

tures, and testing to see which evoked the sun-dried smell."

Is there a movement afoot to bring back those smells of yesteryear? As Avery Gilbert, director of olfactory science for Roure, a competitor of International Flavors and Fragrances, points out, there are sociological trends in fragrance popularity. "Lemon-fresh has been in ascendancy for twenty years. And for the baby boomers, baby powder has been a powerful cultural artifact." Apparently they crave the smell long after infancy; some of the fine fragrances most popular among that generation—Canoe, Ambush, Shalimar—contain the same sweet note. (Talk about the quest for youth! What's next? In Utero by Guerlain?) "One hypothesis I've heard," says Gilbert, "is that the baby-powder scent was so successful originally because it mimicked the smell of newborn babies themselves."

Empirical evidence suggests the connection between scent and memory is strong. One whiff of the weed killer

used on the lawns of my grade school and I'm flooded with intense, idyllic visions of childhood—though Eau de Foliant is certainly not pleasant. Psychologist Arnie Cann of the University of North Carolina has found that fragrance is a powerful link with memory whether the smell is good or bad.

"I was interested in the possibility of using olfactory information as a cue to help retrieve memory," Cann says. So he designed a two-part experiment. First, participants were briefly shown 50 photographs of people and asked to judge their attractiveness. At the same time they were subjected to either a nice, floral fragrance or a stinky chemical—"hard to describe, but it made my colleagues unhappy," says Cann. Contrary to expectations, the pleasantness or unpleasantness of the odor had no effect on attractiveness ratings.

Two days later the same people were shown 100 pictures and asked to identify the ones they'd seen before. "If

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the same odor was present when they first saw the picture, recognition was high," Cann says. "If there was no odor, or if we switched odors on them, the recognition wasn't as high." It didn't matter if the odor was pleasant or unpleasant; it aided memory.

"We have all had the experience of odors retrieving childhood memories," Cann says, "but nobody has shown until now that memory can be retrieved through systematic odor cues." The finding has practical applications. Some day, he speculates, smells could be used to enhance courtroom testimony. "If in fact it could be determined that a distinctive odor was present at the scene of a crime, and if you could reinstate that odor, then someone might be better able to recall the event. That's untested, but it's a natural extension of what we found." (Can't you just hear the judge pounding his gavel and shouting "Odor in the court!" Of course, witnesses may be intimidated by threats of cement nasal spray.)

Other interesting applications might come from the work of psychologist Pete Badia at Bowling Green State University in Ohio. He's studying how well people smell—not how good they smell—in their sleep. "We knew that the auditory system functions during sleep," he says, "but there had been virtually no work on olfaction. Sleeping people don't always respond to the smell of smoke, so we weren't sure."

Volunteers who spent the night in the sleep lab were told that when they smelled an odor—generally jasmine or peppermint, delivered via a steady flow of air through a modified oxygen mask—they were to respond by fully awakening and pressing a switch taped to their hand. Sixteen percent pressed the switch on cue, although fewer than half of them took the trouble to wake up first. Even among the other 84 percent, though, most subjects showed some telltale changes in heart rate, respiration, mus-

cle tension, and brain waves.

"Clearly the olfactory system functions during sleep, and clearly this has safety implications," Badia says. (Could I interest you in a Completely Organic Smoke-Activated Gorgonzola Distant Early Warning System?) Next he's going to look at whether different fragrances have an effect on the quality of sleep. Eventually Badia will attempt to manipulate restfulness and wakefulness. (You might want to get busy on a Strawberry Alarm Clock or a timepiece that releases some other scent—skunk, sweat sock—able to roust the heaviest of sleepers. "My God! It smells like 7:30 already—I'll be late for work!")

I begged my editor to include a scratch-sniff with this column; I wanted to test a mood-enhancing fragrance designed to induce a devil-may-care attitude. I call it Eau de Hellwithit. And I thought maybe Shimizu might want to come up with a dramatic Japanese cologne called Eau Noh.

But he thinks the idea stinks. 

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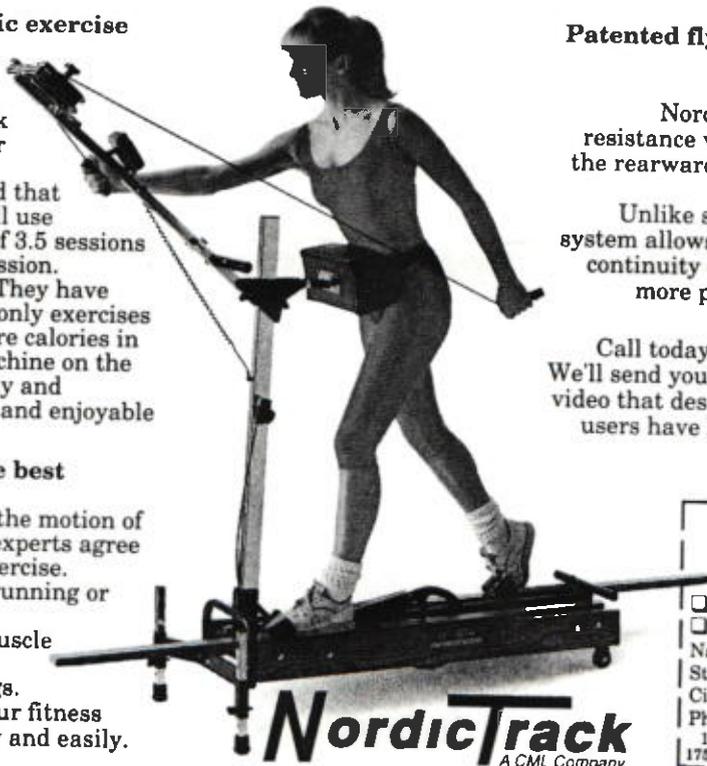
In 1988, Maritz Marketing Research conducted a survey among NordicTrack owners who had owned their machines for more than five years. Their findings showed that fully 69% of respondents still use their machines an average of 3.5 sessions per week, 25 minutes per session.

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